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AUTHOR Estes, Thomas H.
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ABSTRACT

The effects of prereading techniques, specifically "advance organizers" and "structured overview" were studied by comparing retention and comprehension of reading material in high school students with and without prereading treatment. An advance organizer is a brief passage giving a general and inclusive introduction to material to be read. A structured overview consists of student-teacher interaction dealing with terms and concepts related to the material to be read. The subjects were 157 students in social studies classes in a rural Virginia high school. Subjects were tested on reading ability and classified in four reading ability groups. Subjects were then divided into three treatment groups: one group received the advance organizer, one a structured overview, and the control group received no prereading treatment. Students were given a 3,000-word passage on labor unions (an unfamiliar topic), and 24 hours later they took a 22-item test on the passage. Results showed no statistically significant differences between the three groups, although the structured overview group performed consistently better than the advance organizer group. When reading ability was high or low, the control group was lower or equal to the experimental groups, but when reading level was commensurate with that of the passage, the scores of the control group were higher. Tables and references are included. (AL)

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The Effect of Advance Organizers Upon Meaningful Reception Learning and Retention of Social Studies Content[1]

Thomas H. Estes
Associate Director, McGuffey Reading Center
School of Education
University of Virginia
Charlottesville, Virginia

In his recent book, entitled Understanding Reading, Frank Smith (1971) states that what the brain tells the eye is accountable for much more of comprehension than what the eye tells the brain. That is, it is not so much the nature of what is to be read (what is seen by the eye) as it is the nature of the reader (the information processing activity of which he is capable) which determines comprehension. One implication of this suggests the possibility

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1. A note of thanks is due to the staff and students of the Greene County Public Schools, Stanardsville, Virginia, who participated in the study, and to the researcher's assistant, Miss Julie Johnstone, whose help made this study possible.

that comprehension may be more affected through modification of the reader in preparation for reading than through modification of the reading material.

Similar thinking must have led David Ausubel (1960) to formulate a theory of comprehension which he operationalized as an "advance organizer." This theory is comprised of three successively dependent hypotheses:

1) A person's cognitive structure is an intricate system of concepts, hierarchically arranged in terms of their inclusiveness.

2) New concepts and understandings are learned insofar as they can be subsumed into the learner's hierarchical cognitive structure.

3) Learning and retention are facilitated by a conscious and active awareness of the proper subsuming concepts within which the new learning fits.

Ausubel's operationalization of this theory involves preceding the learning task (in most cases a printed passage to be read and understood) with a short introductory passage dealing with the content of the learning task at a higher level of generality and inclusiveness. It is Ausubel's idea that this introductory activity will serve to mobilize relevant concepts in the mind of the reader under which the content of the passage can be subsumed. The theory and its operationalization are logically sound and stand on a rather firm empirical base (Ausubel, 1960; Ausubel and Fitzgerald, 1961; 1962; Ausubel and Youssef, 1963; Earle, 1969; Estes, Mills, and Barron 1969; Fitzgerald and Ausubel, 1963; Grotelueshen and Sjegren, 1968; Murphy, 1962).

Several difficulties with the advance organizer have become apparent, however. As an aid to comprehension, it is almost impossible to use. The teacher or researcher is never quite sure whether the introductory passage is at a truly higher level of generality and inclusiveness in comparison to the learning passage. Furthermore, one can never conveniently know the nature of the concepts the organizer is supposed to mobilize in the mind of the reader, or, indeed, whether the concepts even exist for the individual. (In fact, organizers seem definable only on an ex post facto basis. If it worked, it was an advance organizer for the reader; if it didn't, it was not. Ausubel himself has stated this.[2]) It seems that if the learner's cognitive structure is incomplete in terms of the necessary relevant concepts, there will simply be nothing for the organizer to organize. On the other hand, if the learner's understanding of those concepts is already very clear, the organizer will act as mere noise, either having no effect or actually inhibiting learning which might otherwise have been successful.

In response to the two problems listed above, Richard F. Barron (1969) has developed a prereading technique which is theoretically similar to the advance organizer but which allows for an interaction between the learner and teacher. The technique is described as a "structured overview". It is constructed by arranging words relevant to the important concepts in the learning passage in a graphic form to depict for the reader the relationships between those concepts and the general area of knowledge of which the understandings in the passage are a subpart. The interaction between the learner and teacher allows the latter to estimate the relevancy of the concepts

2. By personal communication to the author as one of a group who interviewed Dr. Ausubel via telelecture in November, 1968.

to the learner's existing cognitive structure and to make minor adjustments in the structured overview as it is presented. Hopefully, the teacher can help the learner appreciate this relevancy while simultaneously aiding him in the mobilization of the concepts which he will find useful in understanding the learning task.

Part of the second problem listed above is not completely solved by the structured overview, however. A question remains as to whether the learner's cognitive structure is either incomplete or already very stable and clear with respect to the concepts necessary for subsumption of understandings contained in the learning passage. It is possible that the success of any prereading organizing device depends on the relationship between the difficulty of the learning passage and the reading ability of the learner.

This idea is based on two unproven but related and logically appealing ideas. First, reading ability is probably closely related to the reader's previous conceptualizations. Second, it is those conceptualizations which, when properly mobilized and available, allow the reader to comprehend whatever he reads. The implication of this for the success of prereading organizing devices is that where the difficulty of a passage is within the range of ability of the reader, these devices will act as facilitators of increased comprehension. On the other hand, where the difficulty is outside the range of ability of the reader (whether too difficult or too easy), prereading organizers will not have this facilitating effect.

This study sought, therefore, to answer two questions: (1) Does the structured overview as proposed by Barron have the same

or similar effects on reading comprehension as Ausubel's advance organizer? (2) Is the facilitative effect of both devices a function of the relationship between the difficulty of the learning passage and the reading ability of the learner?

Method

Subjects for this study were drawn from a small, rural community high school. Two social studies classes at each grade level, 8-12, were involved in the experiment. All students were asked to read a 3,000 word passage on the topic of the rise of labor unions in the United States. The grade level difficulty of the passage was 9.6 as measured by the Dale-Chall readability formula. The particul topic of the passage was judged to be rather unfamiliar to the stude since their rural culture does not include concern with labor unions.

Students (N=157) were randomly assigned within classes to three treatment conditions. One group of students were asked to read the labor union passage preceded by a shorter passage concernin the more general topic of industrialization. This was the advance organizer. It, too, was written at a ninth grade level of difficulty. It described industrialization as possible because of changes in transportation, improved machinery, increased efficiency in production, the rise of factories, growing corporations, and increased numbers of workers. The topic of labor unions can be thought of as a subpart of the more general topic, industrialization.

A second group of students were asked to read the same passage preceded by a short discussion of industrialization stimulated by structured overview. The content of the overview was essentially

the same as that of the advance organizer, the differnece being that the concept and its accompanying terminology were presented in graphic form. Students were encouraged to discuss the overview by relating the terms in it to their own store of experience and knowledge. The discussion was limited to approximately ten minutes.

The third group of students who read the passage served as a control group. No prereading activity was provided for them.

A test over the content of the learning passage was administered to all pupils twenty-four hours after treatment. A forty-item, first draft of the test had been administered to three groups of ninth grade pupils who were different from those later to serve in the experiment. One group took the test after having read the learning passage, a second group took it after having had exposure to only the advance organizer, and a third group took it after having only discussed the structured overview. Items retained in the final draft were those which were easier for the group who read the passage than for either the group who read the organizer or those who discussed the structured overview. This was necessary in order that the content of the passage and not the content of either the organizer or overview be reflected in the criterion instrument. Twenty-two items were retained for the final draft which had a split-half reliability of +.75

In addition to the data collected in this experiment, previously collected information was assimilated on the pupils' reading ability. An all-school testing program, administered in

March of the pupils' eighth grade year, served as a source for this data. Very few pupils were lost from the experiment due to missing data since the population of the school tends to be very stable. Though interpolations to their present reading level from information which was three months to four years old could not be assumed accurate in terms of assigning a grade equivalency to an individual, it was felt that relative standing of the pupils would have remained fairly constant. For example, high ability readers in eighth grade probably remain high relative to their peers at a later date. Since what was needed for this experiment was an estimate of relative standing for each pupil, the data seemed sufficient.

Based on this information, subjects were divided into four reading level groups. Interpolations suggested that Group 1 was functioning at below a grade 7.0 reading ability level, Group 2 at 7.0 - 8.9 level, Group 3 at a 9.0 - 10.9 level, and Group 4 at a level above 10.9.

Results

The empirical outcome of this study is depicted in Figure 1. A mean score on the criterion instrument (the test over the labor union passage) was computed for each experimental group for each of the four reading level groups. No statistically significant differences appeared among the treatment conditions at any reading ability level. The plot does reveal, however, that though differences are small, a pattern to the scores is evident. The structured overview treatment group performed consistently better than the

advance organizer group at each ability level. This consistency of results across ability levels suggests an affirmative answer to the first question posed earlier--the structured overview and the advance organizer seem to have had similar effects on reading comprehension. Performance of the control group, on the other hand, was opposite to what was expected. Their scores were lower or equal to the experimental groups' when reading ability was high or low, but where reading ability was most commensurate with the difficulty of the reading passage, control scores were higher than those of either treatment group.

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Insert Figure 1 About Here

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Discussion

The absence of statistically significant results in an experiment is always difficult if not impossible to interpret. Final judgment concerning relative effectiveness of treatments must, of course, be withheld. But results demand exploration if only in the form of conjecture and in formulation of further plans to subject the theory to empirical test. Therefore, while this study failed to offer strong evidence in favor of its theoretical base, it does provoke several thoughts.

At least four factors may have mitigated against the success of this study in achieving statistically significant results.

First, the criterion instrument was quite difficult, this tending to keep all mean criterion scores low. Second, the reading ability of pupils involved was not distributed evenly across their grade levels--almost three-quarters of the sample was reading below an approximate ninth grade level of ability as interpolated from earlier testing. Perhaps data on reading ability collected at a time closer to that of the experiment would have revealed a different pattern, though this is questionable. Third, and related to this, the small number of pupils in the top reading ability groups worked against statistically meaningful findings. Fourth, and perhaps most important, it is possible that rough groupings of pupils at four approximate ability levels, while compensating for large variance of reading levels within grade levels, may have introduced another source of crucial variance in the form of chronological age. Age, like reading ability, is probably also closely related to cognitive structure and informational background.

A subsequent study should be designed to compensate for this variance by introducing chronological age as a third independent variable. The hypothesis posited in this case would be that where age (or grade in school) and reading ability were both in accordance with the informational content and difficulty of the reading passage, an organizing device would operate in one way, but when the three-way match was out of kilter, it would operate in some other pattern.

What might be that pattern? Will the structured overview continue to function at a more facilitative level than the advance organizer as in the present study? Will the devices continue to

have similar effects? Will the control group, with no prereading organization, again function better at mid-range ability (and grade) levels but not at the two extremes? The next step in this line of investigation will seek answers to these questions.

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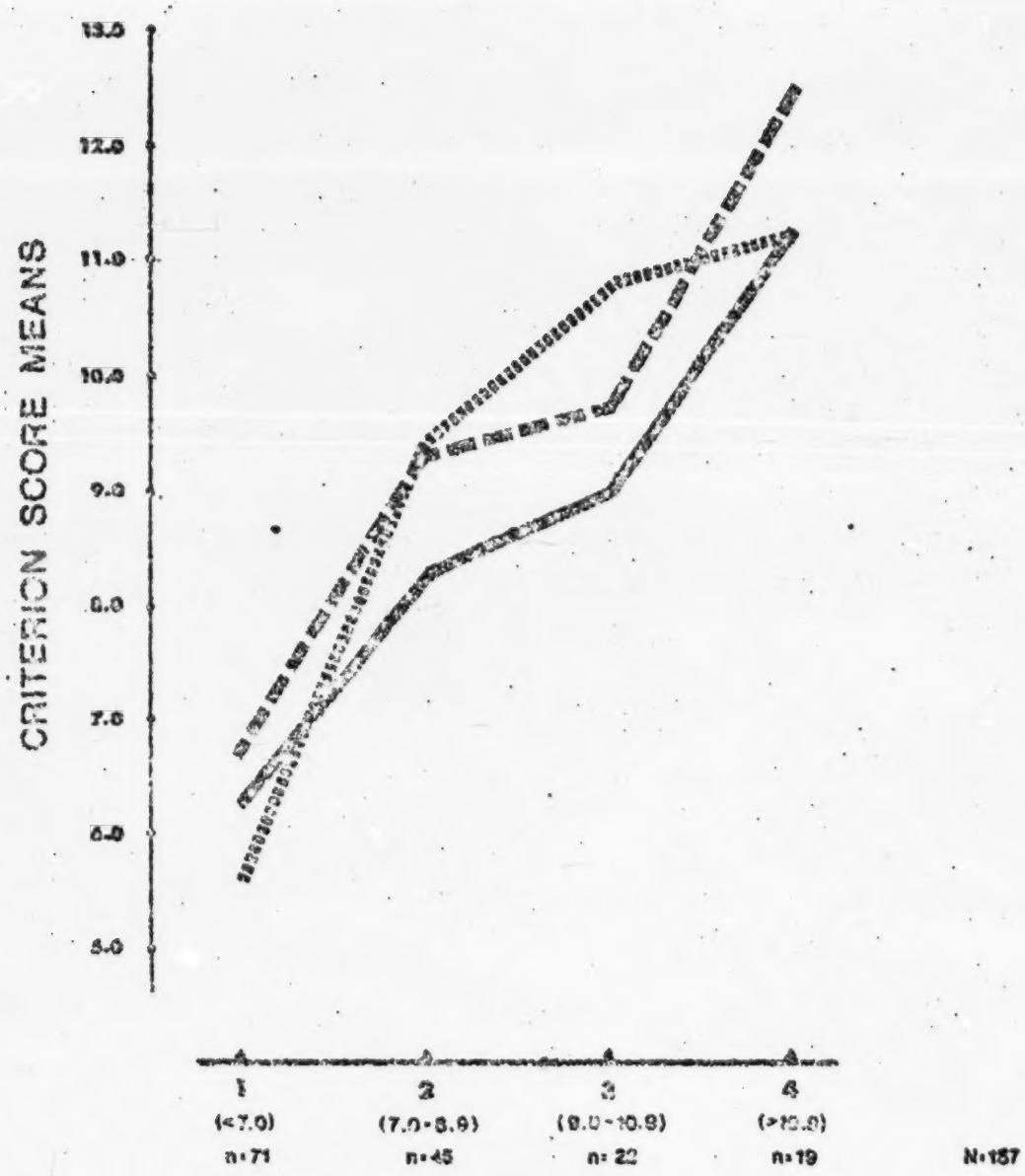

Figure 1: Criterion scores plotted against reading ability groups